

APONOMMA ELAPHENSE PRICE, 1959
(ACARI: IXODIDAE): DIAGNOSIS OF THE
ADULTS AND NYMPH WITH FIRST
DESCRIPTION OF THE LARVA

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Abstract.—The larva of *Aponomma elaphense* is described, diagnostic characters for the male, female, and nymph are given and scanning electron photomicrographs are provided for all stages. Range and habitat information is provided for the only known host of *A. elaphense*, *Elaphe subocularis*, the Trans-Pecos rat snake.

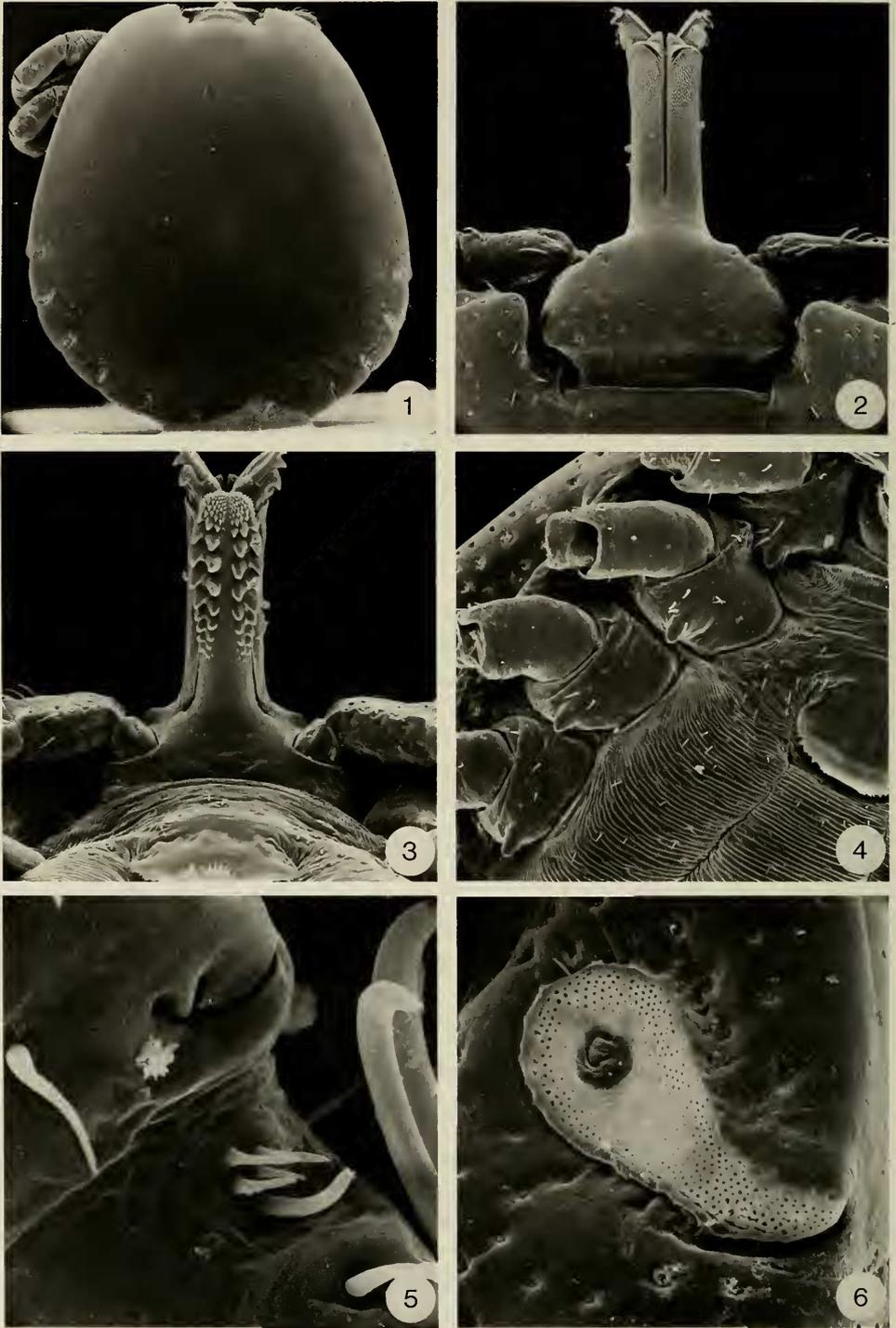
Worldwide, there are approximately 21 species in the genus *Aponomma*, only two of which are found in the Western Hemisphere, *A. quadricavum* Schulze, found in Haiti and Cuba (Schulze 1941; Cerný 1966), and *A. elaphense* Price, found in Texas, parts of New Mexico and northern Mexico (Price 1959; Degenhardt and Degenhardt 1965).

During examination of a series of the Trans-Pecos rat snake, *Elaphe subocularis*, the only known host of *Aponomma elaphense*, one of us (W.G.D.) collected numerous adults, nymphs, and previously undescribed larvae of that tick (Degenhardt, in press). We give a diagnosis of the male, female, and nymph of *A. elaphense*, illustrating key characters with scanning electron photomicrographs (SEM) and describe the previously unknown larva. Specimens were prepared for SEM by the method of Corwin et al. (1979).

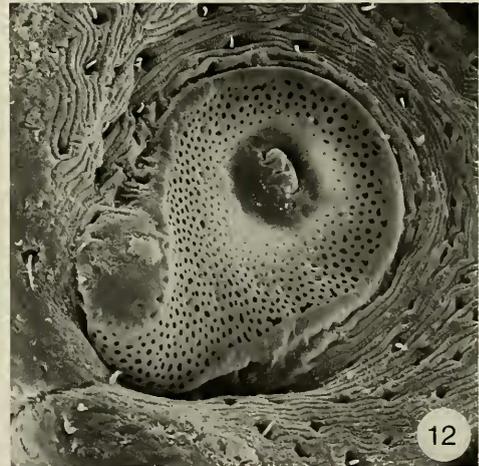
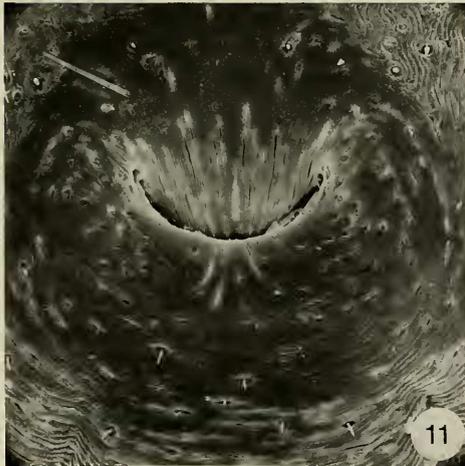
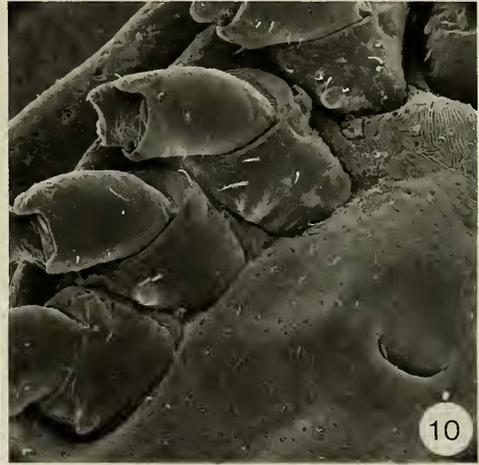
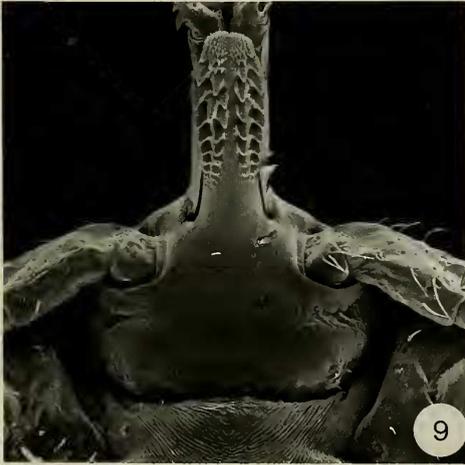
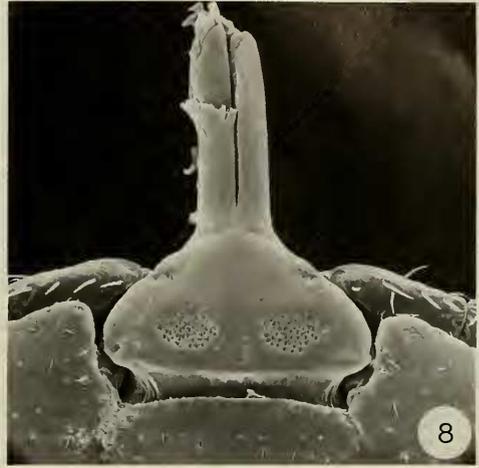
Aponomma elaphense Price, 1959

Diagnosis—male (Figs. 1-6).—A very small *Aponomma*, ca. 2.00 mm long (excluding capitulum) ca. 1.85 mm wide; inornate, light brown. Scutum (Fig. 1) smooth, without cervical or marginal grooves, setae and punctations minute, inapparent under binocular microscopy. Capitulum dorsally (Fig. 2) subtriangular, lacking cornua; ventrally (Fig. 3) with hypostomal dentition 2/2 throughout, apically with a large corona of fine denticles; palpi elongate. Legs (Figs. 4, 5) each with a single triangular spur on coxae I-IV; Haller's organ roof slit-like and slightly bifurcate medially, 5 anterior pit setae. Spiracular plate (Fig. 6) suboval with a long narrow dorsal prolongation, goblet cells minute.

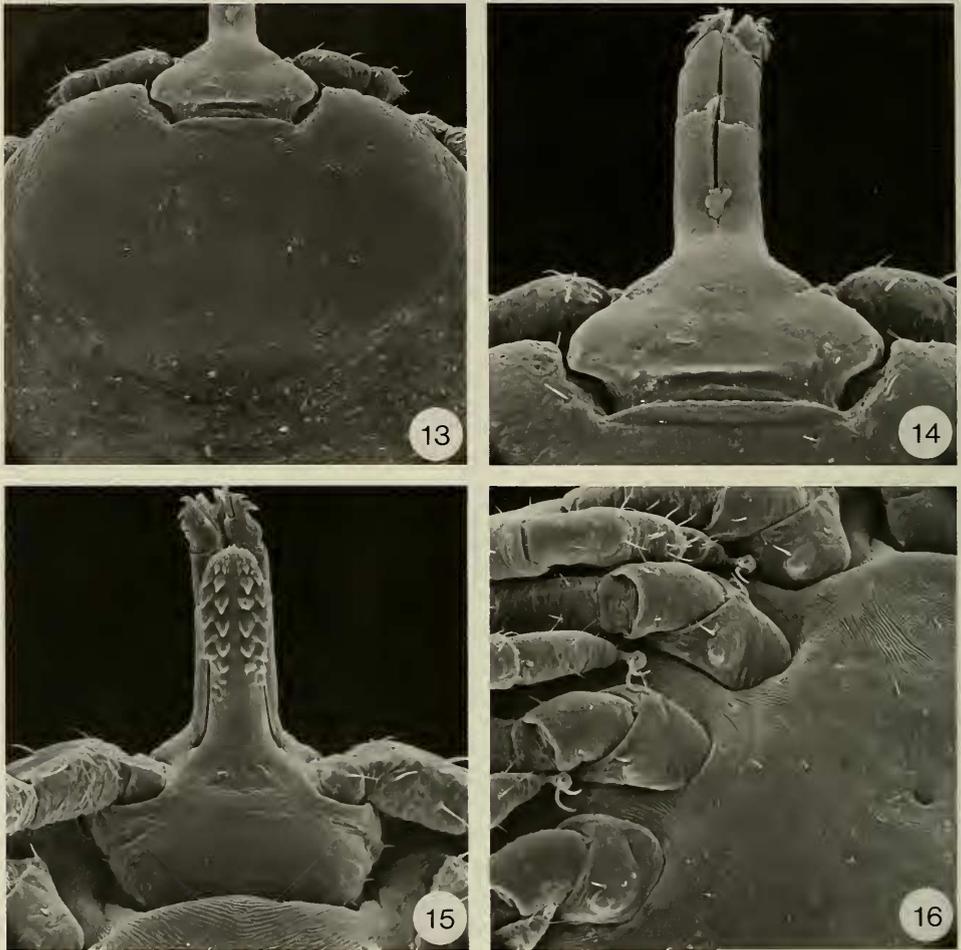
Diagnosis—female (Figs. 7-12).—Small, suboval, ca. 2.40 mm long (excluding capitulum) ca. 2.15 mm wide; inornate, light brown. Scutum (Fig. 7) broader than long, cordiform, smooth, without cervical grooves, setae and punctations minute. Capitulum dorsally (Fig. 8) subtriangular, cornua absent; porose areas subcircular, shallow; ventrally (Fig. 9) with hypostomal dentition 2/2 [although the hypostome figured has a single supernumerary tooth between file one and two on the left side of the hypostome as viewed from above]; palpi elongate. Legs (Fig. 10) with coxae as in male. Genital aperture (Fig. 11) at level of coxae II. Spiracular plate (Fig. 12) suboval with a short dorsal prolongation, goblet cells minute.



Figs. 1-6. *Aponomma elaphense* ♂ (RML117420): 1, Dorsal view (53×); 2, Capitulum, dorsal view (212×); 3, Capitulum, ventral view (212×); 4, Coxae I-IV (106×); 5, Haller's organ (1590×); 6, Spiracular plate (318×).



Figs. 7–12. *Aponomma elaphense* ♀ (RML117420): 7, Scutum (64×); 8, Capitulum, dorsal view (106×); 9, Capitulum, ventral view (106×); 10, Coxae I–IV (117×); 11, Genital aperture (318×); 12, Spiracular plate (318×).

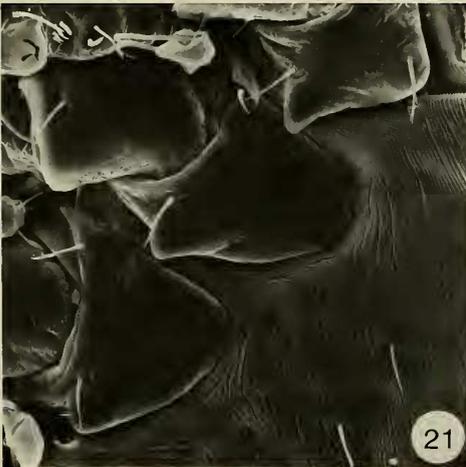
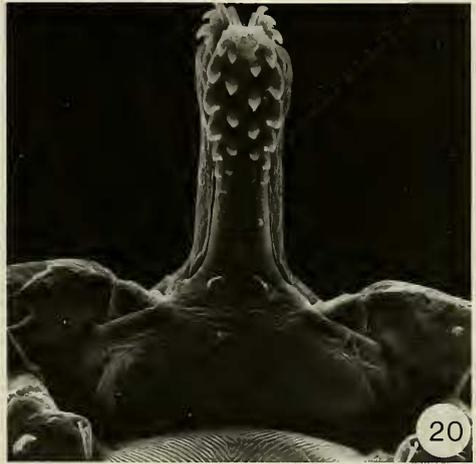
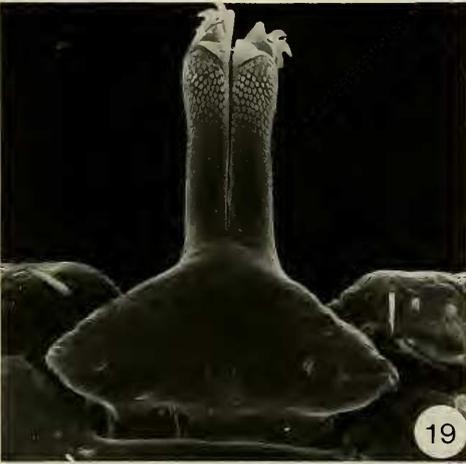
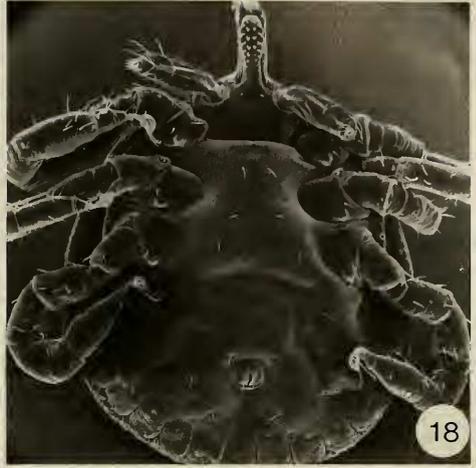
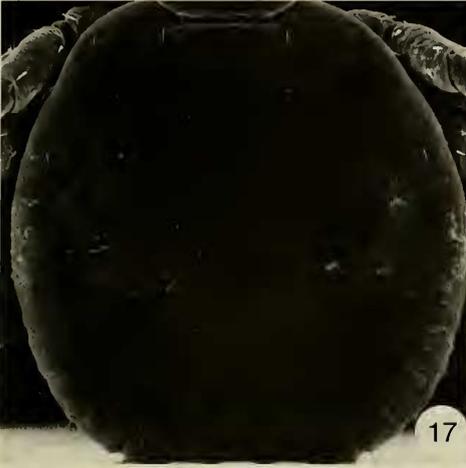


Figs. 13–16. *Aponomma elaphense* Nymph (RML117420): 13, Scutum (106 \times); 14, Capitulum, dorsal view (212 \times); 15, Capitulum, ventral view (212 \times); 16, Coxae I–IV (212 \times).

Diagnosis—*nymph* (Figs. 13–16).—Small, suboval, about as wide as long. Scutum (Fig. 13) with scale-like markings over the surface, otherwise as in female; capitulum dorsally (Fig. 14) broadly triangular, corona absent; ventrally (Fig. 15) with hypostomal dentition 2/2, a small cornua of minute denticles apically. Legs (Fig. 16) each with a very small bluntly rounded spur on coxae I–IV. Spiracular plate suboval, without dorsal prolongation.

Description—*larva* (Figs. 17–22).—Measurements (mm) based on 12 partially engorged specimens include a range and mean (in parenthesis).

Body (Fig. 17, 18): Length from scapular apices to posterior body margin 0.567–0.670 (0.617); width 0.549–0.622 (0.578), outline suboval, widest at midlength, with 11 festoons. Setae dorsally 13 pairs, all minute except for SC_1 ; 2 central dorsal pairs; 8 marginal dorsal pairs, 2 of which anterior to sensilla sagittiformia; supplementary setae absent; 3 scutal pairs. Ventrally 15 pairs; 3 sternal pairs; 2 preanal pairs; 4 premarginal pairs (one specimen with 5 pairs, with posteriormost



Figs. 17–22. *Aponomma elaphense* Larva (RML117420): 17, Dorsal view (212×); 18, Ventral view (212×); 19, Capitulum, dorsal view (424×); 20, Capitulum, ventral view (424×); 21, Coxae I–III (530×); 22, Haller's organ (1590×).

on right side doubled); 5 marginal ventral pairs; 1 pair on anal valves. Capitulum (Figs. 19–20) subtriangular 0.060–0.091 (0.077) long, 0.156–0.168 (0.164) wide. Dorsally with posterior margin straight, posterolateral margin angled, cornua absent; basis capituli ventrally broadly rectangular. Palpi 0.125–0.149 (0.137) long (because all larvae were collected while feeding the palpi are splayed back against the first pair of legs). Segments decreasing in the order 4, 1, 3, 2; setae number ca. 10 on segment 4, 3 dorsally, 1 laterally, 2 ventrally on segment 3; 3 dorsally, 1 laterally, 2 ventrally on segment 2; 0 on segment 1. Hypostome (Fig. 20) 0.108–0.122 (0.115) long, bluntly rounded apically with few minute hooklets; dental formula 2/2. Posthypostomal setae 1 pair; distance between PH, 0.026–0.031 (0.029). Scutum (Fig. 17) 0.293–0.311 (0.302) long, 0.372–0.409 (0.394) wide, outline as illustrated, unornamented; eyes absent, cervical grooves absent, punctations absent. Setae 3 pairs, SC₁ relatively long. Legs. Coxae I–III each with small triangular external spur (Fig. 21), internal spurs absent; setae: coxa I with 3, coxae II & III with 2 each. Tarsus I 0.151–0.187 (0.172) long. Haller's organ (Fig. 22) with roof bifurcate; anterior pit setae: 1 porose, 2 fine, 1 fine or perhaps setiform.

Species Relationships

Kaufman (1972) considered the genus *Aponomma* to be a heterogeneous assemblage and divided them into three groups; typical i.e., African-Asian reptile parasites, indigenous Australian species and "primitive" species. In the "primitive" group he included two species, *A. sphenodonti* Dumbleton, a parasite of the Tuatara, *Sphenodon punctatus*, found on Stephen Island, New Zealand, and *A. elaphense*. Males of *A. sphenodonti* have a 3/3 then 2/2 hypostomal dentition and marginal grooves, whereas males of *A. elaphense* have a hypostome entirely of 2/2 dentition and lack marginal grooves. The presence of a pair of large spurs ventrally on the capitulum of female *A. sphenodonti* easily separates it from female *A. elaphense*. Larvae of *A. sphenodonti* have large elongate cervical grooves which are absent in larvae of *A. elaphense*.

In addition to *A. elaphense*, two other species of *Aponomma* have been reported for the United States, *A. quadricavum* and *A. latum* (Koch). However, both these species were accidental imports and are not established here (Anderson et al. 1981, 1984). *Aponomma latum* is an African species found on a wide variety of snakes and *A. quadricavum* is a Caribbean species (Haiti and Cuba) found on *Epicrates striatus*, *E. angulifer*, and *Alsophis cantherigerus*.

Anderson et al. (1981) provided characters for separating adults of *A. quadricavum* and *A. elaphense*. Larvae of *A. quadricavum* and *A. elaphense* are quite similar, both having 2/2 hypostomal dentition, elongate palpi, a single spur on all coxae, and a similar chaetotactic pattern. However, *A. elaphense* lacks cervical grooves on the scutum, which are moderately deep and distinctive in *A. quadricavum*. Adult *Aponomma latum* have a hypostome with 3/3 dentition and two spurs on coxa I. Adult *A. elaphense* have 2/2 hypostomal dentition and a single spur on coxa I. Larvae of *A. latum* have palpal segment 4 subterminal and cervical grooves present. Larvae of *A. elaphense* have palpal segment 4 terminal and cervical grooves absent.

Adults and nymphs of *A. elaphense* attach most often in the pockets under the edges of the ventral scutes where these meet the dorsal scales. Usually larvae are

found under the dorsal scales higher on the sides of the host. This distribution is probably size-related, as ventral scutes have deeper pockets than the dorsal scales, therefore affording better protection for larger ticks against being rubbed off during movements of the host. Photographs showing tick attachment were published earlier by Degenhardt and Degenhardt (1965).

Elaphe subocularis ranges from southcentral New Mexico south through Texas and east to the southwestern edge of the Edwards Plateau; then south into Mexico through eastern Chihuahua and Coahuila to northeastern Durango and western Nuevo Leon (Worthington 1980; Liner 1982). *Aponomma elaphense* is found throughout the range of the host, and its presence has been documented in most *E. subocularis* populations (Degenhardt and Degenhardt 1965).

Because the Greek combination apo- (away from) plus -omma (eyeless) is neuter, the ending for the specific epithet should be -ense rather than -ensis.

Acknowledgments

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